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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,848	02/27/2004	George Qiyi Zhang	E20020450	6861

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EXAMINER	
PAHNG, JASON Y	

ART UNIT	PAPER NUMBER
3725	

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/788,848	ZHANG ET AL.	
	Examiner	Art Unit	
	Jason Y. Pahng	3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 15-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 15-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/20/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The amendment overcomes the drawing objections made in the last Office action.

Specification

The amendment overcomes the specification objections made in the last Office action.

Claim Objections

The amendment overcomes the claim objections made in the last Office action.

With regard to claim 1, the phrase, "displacement of of" (line 10) should be replaced by "a displacement of".

Claim Rejections - 35 USC § 112

The amendment overcomes the claim rejections under 35 U.S.C. 112 made in the last Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-8, and 15-17, as well as can be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Brundiek (US 5,244,157) in view of Vendelin et al. (US 4,717,084), Williams (US 4,798,342), and Nakano et al. (US 2004/0148078).

With regard to claims 1, 2, and 7, Brundiek discloses substantially all of the claimed structure including:

1. a roll-bowl type mill for pulverizing solid fuels for use in firing a steam geneator (column 1, lines 7-11; column 2, lines -13);
2. a bowl (3) having a predetermined diameter (Figure 9);
3. a roller (1a) assembly (1a, 44, 45) associated with roller bearing;
4. the assembly for holding each of the rollers (1a) and for applying a preload on each of the rollers (1a); and
5. rollers (1a) located a predetermined distance above the bowl (3, Figure 9).

Brundiek also discloses data acquisition system including a sensor (67) for measuring vibration of the roller, but does not recite a sensor for measuring displacement of the roller for the grinding gap. In a closely related art pertinent to the problem, Vendelin discloses a cone crusher with a sensor (25) for measuring displacement of the grinding gap in order to control the grinding gap (column 3, lines 10-12) and determine wear (column 6, lines 43-47). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Brundiek with a sensor for measuring displacement of the grinding gap in order to control the grinding gap and determine wear, as taught by Vendelin.

With regard to the data acquisition system comprising a computer operable to perform data collection and analysis for a roller mill, it is well known in the art to use a computer with a roller mill. For an example, in a closely related art, Williams discloses a roller mill assembly including data acquisition system specifically comprising a computer (column 4, lines 17-30) in order to perform data collection and analyze the data of a roller mill. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek with a computer operable to perform data collection and analysis in order to perform data collection and analyze the data of a roller mill, as taught by Williams.

With regard to the analysis including a frequency power spectrum analysis, it is well known in the art to use a frequency power spectrum analysis in order to analyze data from a displacement sensor. As an example, in a closely related art pertinent to the problem, Nakano et al. discloses using a frequency power spectrum analysis in order to analyze data from a displacement sensor [0151]. Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek (as modified) with using a frequency power spectrum analysis in order to analyze data from a displacement sensor, as taught by Nakano.

With regard to the specific formula recited for the analysis, it would have been obvious that various calculating algorithms can be used in determining the wear. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate a wear calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a

result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA1980).*

Claims 3 and 8 call for the computer to determine thickness of the solid fuel in the mill. In a closely related art, Williams discloses a roller mill assembly with a computer system in order to determine the particle size (column 4, lines 53-55). Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to provide Brundiek (as modified) computer system in order to determine the particle size, as taught by Williams. With regard to the specific formula recited for the determination of particle size, it would have been obvious that various calculating algorithms can be used in determining the particle size. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate a particle size calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA1980).*

With regard to claim 5, Brundiek discloses a trunion or T shaft in Figure 9.

With regard to claim 6, Brundiek discloses a connecting means comprising the assembly (Figure 9).

With regard to claims 15-17, Brundiek (as modified) discloses a computer operable to determine an indicator. With regard to the specific formula recited for the analysis, it would have been obvious that various calculating algorithms can be used in determining the indicator. Furthermore, it would have been obvious to one having

ordinary skill in the art at the time the invention was made to formulate the indicator calculating algorithm with different variables and constants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA1980).*

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brundiek (US 5,244,157) in view of Vendelin et al. (US 4,717,084), Williams (US 4,798,342), and Nakano et al. (US 2004/0148078) as applied above, further in view of Sjostrom (US 6,295,851). Brundiek discloses a vibration sensor mounted on a wall (Figure 9). With regard to the wear of roller bearings, in a closely related art pertinent to the issue, Sjostrom teaches using a vibration sensor with a computer with analysis software (column 2, lines 25-30) in order to determine bearing wear (column 3, lines 54-57). Therefore, it would it would have been obvious to one skilled in the art at the time the invention was made to teach Brundiek (as modified) with the use of a vibration sensor with a computer with analysis software in order to determine bearing wear, as taught by Sjostrom.

Response to Arguments

Applicant's arguments filed March 20, 2006 have been fully considered but they are not persuasive.

Applicant argues (page 10) that Nakano reference is non-analogous because Nakano uses power spectrum analysis of vibrations of etc. Nakano does not disclose (and is not cited as disclosing) using displacement measurements of etc. This is not true. In fact, Nakano is analogous because Nakano discloses using displacement

measurements as set forth in the last Office action. Nakano specifically states use of vibration by power spectrum analysis is obtained "by processing signals such as signals from displacement sensors" in paragraph [0151] which had been cited in the last Office action. As for the literal argument that Nakano does not disclose using displacement measurements of a roller assembly, Examiner agrees. However, Nakano is not relied upon for disclosing displacement measurements of a roller assembly.

Applicant also argues (page 12) that in the combination of Brundiek and Vendelin references, frequrency analysis cannot be performed on a measurement of the grinding gap because it is non-oscillatory. This is not understood. The measurement of the gap is oscillatory. The measurement by the linear transducer of Brundiek and Vendelin would be non-oscillatory only if there is no shaking of the rollers. However, if there is no shaking of the rollers, Applicant's linear transducer would also be non-oscillatory.

Applicant additionally argues (page 13) that the formulas recited in independent claims define relationships between variables, relationships not shown or even remotely suggested by the cited references. This is true and if claim 1 was a process claim, it would overcome Brundiek as modified in the last Office action, but the relationships need not be shown in order to reject an apparatus claim. It is noted that the formulas and the relationships are merely inputs to the apparatus. Applicant is claiming an apparatus, in particular, a roll-bowl mill including a computer. It is noted that, for example, claim 1 does not call for a sensor for measuring a frequency of the bowl. Claim 1 merely calls for a computer capable of processing a frequency of a bowl if such a data is provided to the apparatus. It is noted that claim 1 merely calls for a computer

capable of using a formula such as the one recited if such a formula is provided to the apparatus.

Applicant presents no additional arguments regarding the rest of the claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Y. Pahng whose telephone number is 571 272 4522. The examiner can normally be reached on 9:00 AM - 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks can be reached on 571 272 4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JYP

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